REMOTE CONTROL METHOD FOR CONTROLLING ELECTRICAL APPLIANCE VIA HOME GATEWAY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a remote control method, and more particularly to a remote control method for controlling electrical appliance via a home gateway. The method proceeds with an input signal by a telephone call to initialize ~~initiate~~ the connection of main board (the host) ~~to connect~~ to the INTERNET. After registering ~~to~~ ~~the~~ with a specific DNS server to have ~~the~~ a pre-registered IP address, a ~~the~~ user is able to control the operation~~initiation~~ of household electrical appliances.

2. Description of Related Art

Automation is currently ~~the~~a synonym ~~of~~for modernization. People try every possible means to make our life easy, simple and more convenient. One approach is to remotely ~~remote~~ control ~~the~~ household electrical appliances ~~appliance~~. In the early phase, people ~~try~~ tried to control appliances ~~the appliance~~ by inputting a code through a phone call. By pressing ~~Pressing~~ the telephone buttons, digital signals are generated to control the operation~~initiation~~ of the appliance. However, ~~while~~to control ~~controlling~~ the appliance, the user has to memorize a complicated combination of numbers or a series of numbers so as to proceed with the control, which is quite complex for the user and not convenient. Recently, another approach has been ~~is~~ to proceed with the control by means of the INTERNET, using~~which includes~~ two different types of control. The first one is similar to the previously mentioned conventional method, which ~~and~~ is accomplished by a 56K modem accessing the main board. The second method is

accomplished by ADSL broad-band, which ~~that~~ provides a channel to communicate with the main board. The first method has limitations such as the low speed of data transmission ~~is low~~ and the need to provide a telephone line ~~has to be provided~~ during the entire communication. The second method mitigates the speed problem~~,~~. However, ~~however,~~ the fixed IP connection tends to generate high control costs during ~~controlling cost throughout~~ the process and may not be popular for home use.

To overcome such~~the~~ shortcomings, the present invention ~~tends~~ intends to provide an improved control ~~controlling~~ method to mitigate or obviate the aforementioned problems.

SUMMARY OF THE INVENTION

The primary object ~~objective~~ of the invention is to provide a method to control ~~the~~a household electrical appliance through ~~the~~a gateway provided in each individual house. The connection with the INTERNET is ~~initiate~~initialized only when a phone call is made to activate the home gateway so that the connection cost is kept as low~~maintained minimum~~ as possible.

Another object ~~objective~~ of the invention is to provide a home gateway that is able to function as a fax server so as to send/receive faxed data.

Still, another object ~~objective~~ of the invention is to provide an improved controlling method to activate the household electrical appliance through the indoor ~~power wire~~electrical wiring~~es indoors~~ so that there is no need for~~to~~ extra installation of transmission media to carry the code to various appliances.

Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when ~~taken~~considered in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a system ~~systematic~~ diagram showing the connection between the home gateway and~~with~~ electrical appliances;

Fig. 2 is a diagram showing the internal structure of the home gateway;

Fig. 3 is a schematic view showing the control of the home gateway to various electrical appliances;

Fig. 4 is a schematic view showing the control of the home gateway to various electrical appliances through the ~~power~~ electrical wiring~~lines~~;

Fig. 5 is a schematic view showing the signal transmission interface with the electrical appliances;

Fig. 6 is a schematic view showing the process of code transmission to control the electrical appliances; and

Figs. 7 and 8 show application ~~are applications~~ of the control method through GSM and WAP cellular phones.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

With reference to Fig. 1, the remote control method for controlling electrical appliances via home gateway has a main board (10). The main board (10) provides multiple personal computers (the number ~~for~~of PCs may be up to 253~~)~~) (30) to access to the INTERNET by means of ADSL. Furthermore, the main board (10) is able to transmit the controlling code (data) to appliances through the ~~power~~ electrical wiring~~lines~~ (20) so as to activate the appliances. The main board (10) is able to connect to a modem (50) connected ~~connecting~~ to ~~the~~a phone line so as to connect to a printer, such that the user is able to transmit or receive data through the modem (50).

With reference to Fig. 2, the main board (10) has a controller (11) and two INTERNET ports, one of which is a WAN port (16) to connect to the INTERNET (18) by way of a router (17) ~~to connect to the INTERNET (18) and~~while the other is a hub

(15) to provide access to PCs to connect to the INTERNET (18). Two RS 232 ports are provided on the left side of the drawing, one of which is connected to a power line modem (110) to engage with the household electricity so that the control ~~controlling~~ code is able to be carried away by the ~~power~~ electrical wiring~~line~~, while the other RS 232 port is a communication port to connect to a modem connecting port (12). Furthermore ~~Still~~, another printing port (14) is connected to a printer to provide a USB connecting port (13) to the USB device.

With reference to Figs. 3 to 5, when the method is implemented, at first, the main board (10) is off-line with respect to the INTERNET (18). When the user makes a call to the modem (50) and accesses ~~access~~ the main board (10) through inputting a predetermined password, the main board (10) will automatically link with the INTERNET (18) after the password is verified. When linking with the INTERNET (18), the main board (10) will have to register ~~to~~with a specific DSN server to have a pre-registered IP address so that the main board (10) has the IP address available for outside connections. Then, the user is able to use ~~an~~ INTERNET access ~~accessible~~ equipment (60), e.g., a PC, PDA, Webpad, SMS mobile phone, or WAP mobile phone ~~etc.~~, to retrieve the front page ~~fontpage~~ built into the IP address in the main board (10). The application is shown specifically ~~especially~~ in Figs. 7 and 8, in which a GSM mobile phone, a WAP mobile phone, or a GPRS mobile phone is able to have access to the INTERNET (18) through ~~the~~a GSM, WAP or GPRS server, so that the user ~~is~~has access ~~accessible~~ to the individual home gateway and thus can controls the appliances.

With reference to Fig. 6, the operation procedure of the method comprises the step of data wrapping (66). After the data is wrapped, the data enters a server (62), the main board (10), ~~to proceed~~ proceeds to the user ID verification and password confirmation step (63). Then ~~a step of~~the electrical appliance confirmation is processed (64). When

the subject is confirmed, a control ~~controlling~~ code confirmation (65) is processed ~~proceeded~~. After the control ~~controlling~~ code is confirmed at the previous step, the control ~~controlling~~ code is ready for transmission to the output interface, an RS 232 port. As shown in Fig. 4, due to the existing ~~existed~~ ~~power~~ electrical wiring~~line~~ in each individual house, the control~~ling~~ code is able to transmit to each of the electrical appliances through the aid of the modem (50) and by way of the ~~power~~ electrical wiring~~lines~~. Therefore, there is no need to have extra transmission media to transmit the controlling code, which is quite convenient ~~to~~for the user.

With reference to Fig. 4~~5~~, the power line modem (110) in the main board (10) is able to transform the control ~~controlling~~ code into a modem-compatible language so that a similar power line modem (71) in the individual appliance (70) is able to communicate with the power line modem (110) in the main board (10). Thereafter, a microprocessor (~~73~~72) is responsible ~~to~~for processing ~~process~~ the received signal from the modems (110,71).

With the foregoing method, the connection cost to the INTERNET is ~~maintained~~kept to a minimum and the user only needs to memorize the password to access the main board (10), so ~~that~~ the method is a user friendly method and quite convenient in use.

Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention, to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

ABSTRACT OF THE DISCLOSURE

A remote control method for controlling electrical appliance via a home gateway proceeds with an input signal by a telephone call to ~~initiate~~initialize the main board (the host) to connect to the INTERNET. After registering to the specific DNS server to have a ~~the~~ pre-registered IP address, the user is able to control the operation ~~initiation~~ of household electrical appliances.